

Work Order ID 123975

September-04-14 11:56:11 AM

123975

Page 1

Item ID: D6010-115 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Crosstube Material
 Start Date: 9/04/14 Start Qty: ~~44.00~~ ***44*** Cust Item ID:
 Required Date: 7/30/15 Req'd Qty: ~~44.00~~ ***44*** Customer:
 Reference:

Approvals: Process Plan: MLJ Date: 14-09-04 Tooling: _____ Date: _____
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____
 Run Start ***NR1***
 Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D6010	Rev A								

100

100

Purchasing

Purchasing

PURCHASING

Memo

Issue P/O: 25798

0.00

0.00

CL 14/09/16 44

a) Order as per Dwg D6010

b) Material: 2.250 x 0.320 wall 7075-T6/T6511 (WW-T-700/7 or QQ-A-225/9 or QQ-A-200/11) seamless aluminum tube

c) Minimum ultimate tensile strength = 77 ksi

d) Minimum tensile yield strength = 66 ksi

e) Material cert's is required

EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS.

MUST BE WELL PACKAGE, IF NOT IT WILL BE REFUSE

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td>Skid-tube ☐</td> <td>Crosstube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>	Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
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Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design									
Doc/Data									
Equip/Tooling									
Handling/Pre									
Material									
Operator									
Offset/Setup									
Process									
Supplier									
Training									
Transport									
Unapproved									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
110	Receive & Insp for Damage & Mat'l Certs	0.00							
110									
Packaging	Memo	0.00							
Packaging	Ensure material certification is attached								
120	QC6- Inspect dimensions to drawing	0.00							
120									
QC	Memo	0.00							
Quality Control	Ensure Material certification comply to Dwg								
130	Chemical Conversion Coat per QSI005 4.1	0.00							
130									
HandFinish	Memo	0.00							
Hand Finishing									

CL 15/07/27 38

38 L 38 9-89 DAS 49 9-89 15/07/31

N/A DAS 9 9-89

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Work Order update only ☐

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Design									
Doc/Data									
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Training									
Transport									
Unapproved									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
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Run Start ***NR1***
 Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
140	Identify as per dwg & Stock Location: L6003	0.00				38	0		
140									
Packaging	Memo	0.00							
Packaging									arrml 15/07/31
150	QC21- Final Inspection - Work Order Release	0.00							
150									
QC	Memo	0.00							MLJ AUG 10 2015
Quality Control									

MLJ AUG 10 2015

DQA: _____ Date: _____



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Operator ☐									
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Process ☐									
Supplier ☐									
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Transport ☐									
Unapproved ☐									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
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September-04-14 11:56:15 AM

123975

D6010-115

Required Qty: 44.00

Comments: IPP Rev:A01.08.17New IssueSM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6010-115P *D6010-115P* Crosstube Material		Purchased	No			110	Each	0.0000	1	44 ** 38		CAL 15/07/27	

DQA: _____ Date: _____



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Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
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Material ☐									
Operator ☐									
Offset/Setup ☐									
Process ☐									
Supplier ☐									
Training ☐									
Transport ☐									
Unapproved ☐									

FAULT CATEGORY

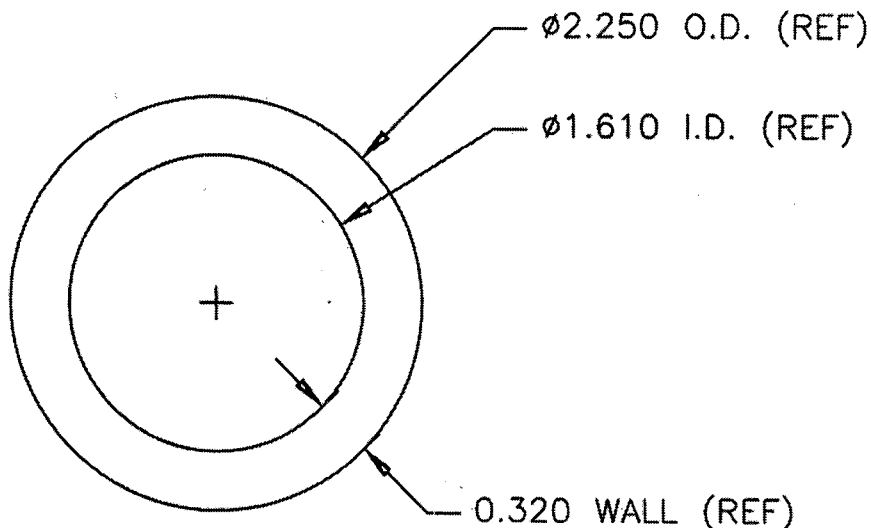
Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
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DESIGN #	DRAWN BY RF	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED #	APPROVED #	DRAWING NO. D6010	REV. A SHEET 1 OF 1
DATE 01.08.16		TITLE CROSSTUBE MATERIAL	SCALE 1:1
A	01.08.16	NEW ISSUE	

SPECIFICATION CONTROL DRAWING

RELEASED
01.08.17



NOTES

- 1) D6010-XXX CROSSTUBE
LENGTH

WHERE XXX IS LENGTH IN INCHES
EG. 115" LONG TUBE: D6010-115

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 123975
14-09-04

- 2) MATERIAL: 2.250 OD x 0.320 WALL 7075-T6/T6511 (WW-T-700/7 OR QQ-A-225/9 OR QQ-A-200/11) SEAMLESS ALUMINUM TUBE.
MINIMUM ULTIMATE TENSILE STRENGTH = 77 ksi
MINIMUM YIELD TENSILE STRENGTH = 66 ksi
- 3) TOLERANCES ARE PER ASTM B210 AS FOLLOWS:
O.D.: ± 0.006 MEAN (± 0.012 INCLUDING OVALITY)
WALL: ± 0.015 MEAN (± 0.032 INCLUDING ECCENTRICITY)
LENGTH: XXX $+0.125/-0.000$
STRAIGHTNESS: 0.010" DEVIATION / 12" LENGTH
- 4) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 5) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

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Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO25798

Purchase Order Date 9/16/2014

PO Print Date 9/23/2014

Page Number 2 of 5

Order From :

VU-ALU001

Ship To : DART AEROSPACE LTD

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

ALUMINIUMWERK UNNA AG
630 3033 SOUTH PARKER RD
AURORA, CO 80014
USA

Contact Name

Vendor Phone 303 755 5672

Ship To Contact

Ship To Phone

Ship Via: Contract Shipping

Ship Acct:

Buyer

Chantal Lavoie

Customer POID

Customer Tax #

10127-2607

Terms

Wire

Currency

USD

FOB

DDP - (Delivered Duty Paid)

				Line Total:	\$25,080.00
4	D6010-115P	Crosstube Material	7/30/2015 Yes 7/30/2015	38 ✓ 44.00 Each 215107127	\$347.00 \$15,268.00
EXTRUDE AS PER DWG D6010-115 REV. A B123975				Line Total:	\$15,268.00
5	D6011-115P	Crosstube Material	8/31/2015 Yes 8/31/2015	20.00 Each	\$720.00 \$14,400.00
EXTRUDE AS PER DWG D6011-115 REV. A B123976				Line Total:	\$14,400.00
6	D6003-102P	Crosstube Material	3/25/16 11/16/2015 Yes 11/16/2015	40.00 Each	\$394.00 \$15,760.00
EXTRUDE AS PER DWG D6003-102 REV. A B123962					

Note:

9/23/2014

RECEIVED

JUL 06 2015



Aluminiumwerk Unna AG · Uelzener Weg 36 · D-59425 Unna

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ONT, K6A1K7
Canada

Aluminiumwerk Unna AG

Uelzener Weg 36 · D-59425 Unna

Postfach 11 46 · D-59401

fon +49 (0) 23 03-206 - 0
fax +49 (0) 23 03-206- 116

info@alunnatubes.com
www.alunnatubes.com

page: 1
date: 26.06.2015
customer 40980

delivery note

88642

your PO dated: 16.09.2014
your PO No.: PO25798
confirmation No.: 54642

contact: Petra Eisenblätter
Tel.: +(303) 755 5672
Fax: +(303) 755 5936
representative: CLAUS J. BETTER

CARRIER: Senator International
Seur VAT No.:
AWU VAT No.: DE177869055
Country of origin: Germany

We supply acc. to our delivery terms and conditions:

item	quantity	unit	net kgs
------	----------	------	---------

400	38,000	PC	✓
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AWU article: 35316 / Tariff no. 76082081

Customer article: D6010-115 ✓ 2.250 X 0.320 X 115 / cust. drwg.

product: Tubes / seamless extruded / EN AW-7075 / round

condition: T 6511 / AMS-QQ-A-200/11(A)

outer diameter:	2,250 INCH Tol.	+0,012	-0,012
tol. for mean OD		+0,006	-0,006
inner diameter:	1,610 INCH		
wall thickness:	0,320 INCH Tol.	+0,032	-0,032
fixed length	115,000 INCH Tol.	+0,125	

inspection cert. acc. to EN10204/3.1 / RM 531 / Rp0,2: 455

RMS max.: outer 25 / tol. on quantity +10 % -10 % / scurfed

2.250" OD 0.320" Wall, 115" lengths

Part Number D6010-115 crosstube

Surface Finish max. RMS 25

Tolerances per ASTM B210 / your drawing D6010

Tubes protected with corrosion protective oil

Tubes line marked

Packing: seaworthy wooden cases

CL15/07/27

Commerzbank AG, Unna

Konto-Nr. 102 56 00 - BLZ 443 400 37

BIC/S.W.I.F.T. - Code: COBADE FF 443

IBAN: DE 90 4434 0037 01025600 00

Sitz der Gesellschaft: Unna
Amtsgericht Hamm, HRB 3045

Vorstand: Thomas Wiese
Vorsitzende des Aufsichtsrats: Irene Wiese

11 Zahlungsanforderungen

delivery note**88642**

page: 2
date: 26.06.2015
customer 40980

number of packages: 1
number of pieces: 38

Terms of payment: 30 days after date of delivery
terms of delivery: DDP (Delivered, Duty, Paid)

weight:	gross	493,500	net	391,000
---------	-------	---------	-----	---------

Packstücke 1

customer address:

DART AEROSPACE LTD.
1270 Aberdeen Street
HAWKESBURY ON K6A 1K7
Kanada

1. 2. 3.

⁷ Schutzrechte: 3 711 511

7 Schutzrechte 30 P.

8. Later, April 27 - April 28, 1941

2. **Zur Nachbereitung:**

9. Kreditengedien

12. Schlußbestimmungen

Abnahmeprüfzeugnis 3.1 - DIN EN 10204:2005

Inspection Certificate 3.1 - DIN EN 10204:2005 / Certificat de Reception 3.1- DIN EN 10204:2005

Kunde: Dart Aerospace Ltd.
Client:

1270 Aberdeen Street
K6A1K7 Hawkesbury, ON Canada

Produkt: Rohre nahtlos gepresst
Product / Produit: Tubes seamless extruded

Spezifikation: AMS - QQ - A - 200/11; -
Specification:

Werkstoff: 7075
Alloy/Alliage:

Abmessung: 2,250 INCH x 1,610 INCH x 0,320 INCH x 115,00 INCH
Size / Dimension: D6010-115 ✓

Kennzeichnung: ALUnna - Cert No. 876/15 - 7075 - T 6511 - Cast No. 3282 - AMS - QQ-A - 200/11 - 2.250" OD X 0.320" Wall - Heat Lot No. 401912 -
Marking/Marquage: ALUnna Order Conf. No. 54642/400-1- PO. 25798

Lieferung: pcs. lbs
Delivered Material / Matériel délivré: 38 862
Country of Manufacture: Germany
Products are in accordance with applicable RoHS

1. Chemische Analyse Chemical Analysis / analyse chimique

Charge/ min. Cast No. max.	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Zr	Bi	Sn	Ni	Na
	0,40	0,50	1,2 2,0	0,30	2,1 2,9	0,18 0,28	5,1 6,1	0,20						
3282/15	0,100	0,175	1,527	0,049	2,461	0,204	5,915	0,046	0,002	0,0197	0,0001	0,0014	0,0060	0,0001

Hydrogen content: 0,10 **ccm/100 g Al** Elements without indication < 0,01 % **country of melt manufacturer: Germany**

2. Mechanische Eigenschaften Mechanical Properties / Valeurs Mécaniques

Anforderungen Requirements	tensile (Rm) ksi	yield (Rp0,2) ksi	elongation 2" %	elongation A %	Hardness HB	Heat Lot No.
	81,0	73,0	7,0			
1	84,680	78,010	8,0			401912
2	82,940	76,560	8,0			

RMS: outside 25 - max. 10,0 µ"

Ergebnis der Prüfungen: Es wird bestätigt, daß die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellannahme entspricht

Test results: We confirm that the delivery has been tested and applies to the agreements made on receipt of the order
Resultats: Nous confirmons que la livraison a été contrôlée et correspond avec les conventions faites à la réception de la commande

GschwindU



Certified acc. DIN EN ISO 9001:2008 and DIN EN 9100:2009
valid until 2016-11-10

Cert.- Reg. No.: 001959 QM08; 001959 ASH 09-1



ALUnna

[Signature]

24.06.2015

Aluminiumwerk Unna AG, Uelzener Weg 36, 59425 Unna, Germany

Abnahmebeauftragter

